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GB 1357953 A WO 94/25393 A1 IE 790000229 A
US 3827452 A

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(54) Valve mechanism

(57) A valve mechanism is described of the kind which is used in the dispensing of beer or the like liquid, which is to be inserted in a delivery line extending from a supply to a conventional dispensing head. The valve mechanism comprises a housing (6) having an inlet (8), which in use is connected to the supply, and an outlet (10) which extends to the dispensing head. Mounted in the housing is a chamber (12) into which liquid flows from the inlet (8) through an inlet port (16a), and from which liquid flows through an outlet port (18) to the outlet (10). A float (14) is mounted in the chamber (12) to block the outlet port 18 when fob enters the chamber 12.

The housing comprises valve means including a valve body (20) and twin spool valve members (22a, 22b), which may be moved between a first condition in which there is a direct connection from the inlet to the outlet, and a second condition in which the inlet is connected to the outlet by way of the chamber (12). This enables the chamber (12) to be isolated from the supply line during cleaning thereof.

FIG 1

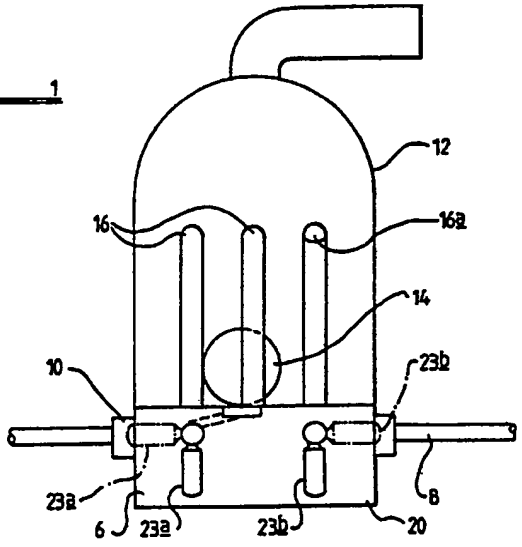
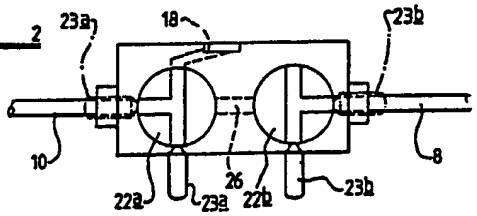


FIG 2



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1990.

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FIG 1

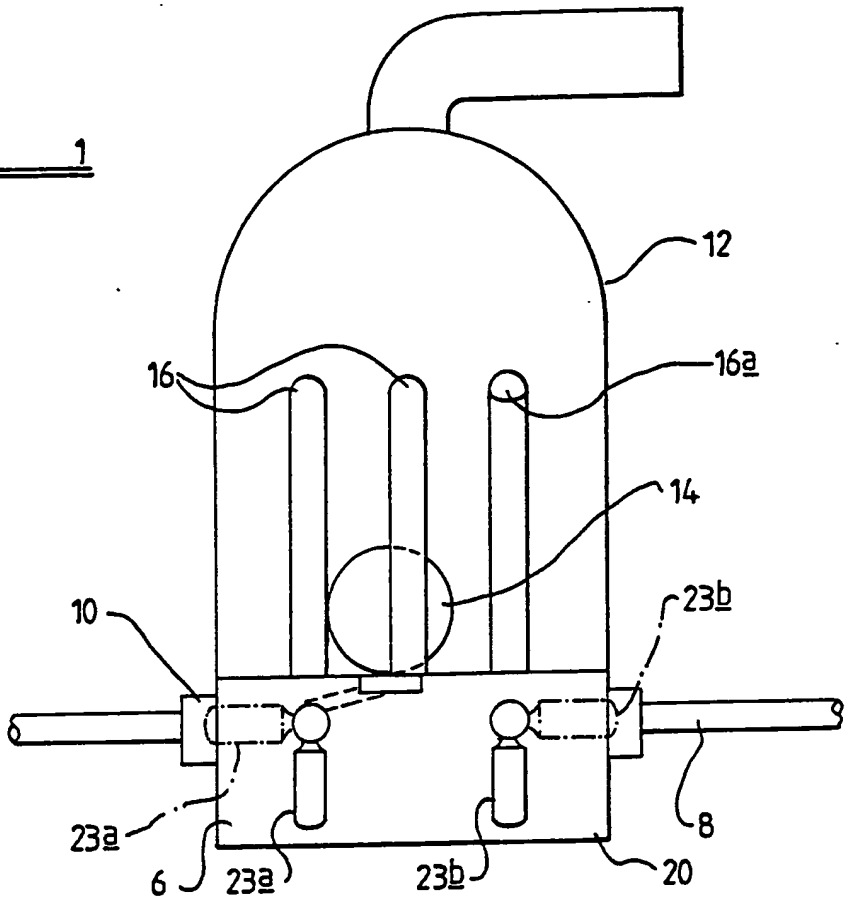


FIG 2

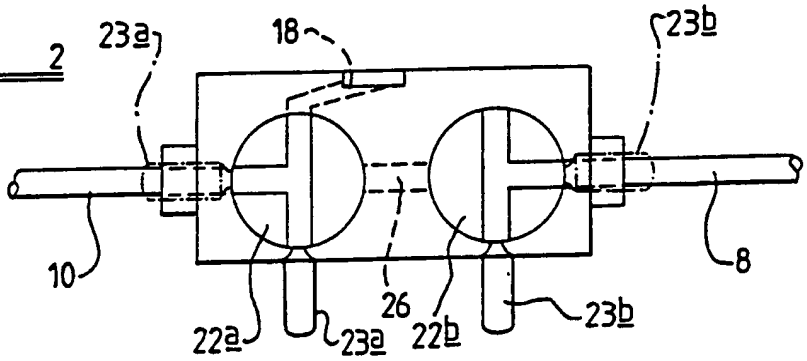
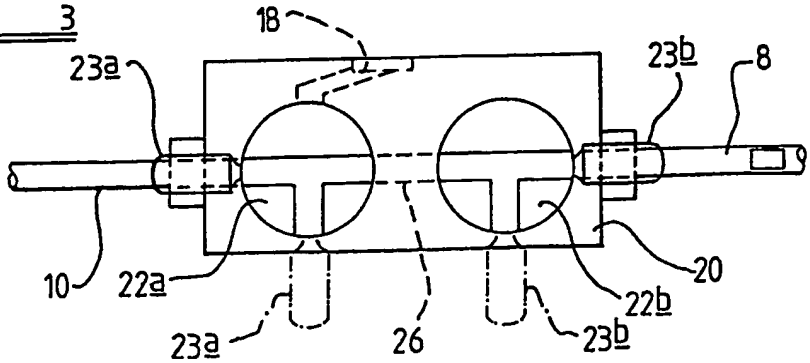


FIG 3



Title: **Improvements relating to valve mechanisms**

Description of Invention

This invention is concerned with improvements relating to valve mechanisms.

In the dispensing of beer, beer is drawn from a supply, which may be typically a tank or a barrel, through a delivery line to a dispensing head. The dispensing head may be a manually operated pump, to draw beer from an unpressurised barrel, or may comprise a manually openable tap, to allow beer to be delivered from a keg under pressure.

A well known problem is that when the supply of beer terminates, it is desirable to prevent air or pressurised gas from being drawn into the delivery line by continuous operation at the dispensing head, since difficulty is then encountered in "priming" the delivery line for further use, once the supply has been replenished.

To overcome this problem a valve mechanism is installed in the delivery line adjacent to the supply, conventionally of the kind known as a "fob detector", comprising a chamber in which a float is located, an inlet for connection to the supply and opening into the chamber, an outlet opening from the chamber for connection to the dispensing head. When the delivery line is fully primed, the float rises, allowing flow of beer through the valve mechanism from the inlet to the outlet. In the event that the supply of beer terminates, the float drops, closing the outlet and preventing gas entering the section of the delivery line extending from the outlet to the dispensing head.

Such a mechanism is hereinafter referred to as a valve mechanism of the kind specified.

It is necessary to clean the delivery line frequently, to maintain hygiene, and to avoid the build up of yeast. A conventionally utilised cleaning mechanism involves the use of a cleaning fluid, which is flushed through the

delivery line, and a sponge pellet to scour the delivery line. This is inserted at an upstream point, and caused to flow through the delivery line to a downstream point, expanding within the delivery line to scour the walls of the pipework. However such a conventional cleaning system cannot be utilised with a valve mechanism of the kind specified in line, and it is therefore necessary, prior to using a sponge pellet, to disconnect the fob detector, and replace it by a length of straight pipe, to allow the pellet to pass from the upstream side of the fob detector to the downstream side. This is exceedingly time consuming, and it is one of the various objects of this invention to alleviate this problem.

According to this invention there is provided a valve mechanism of the kind specified, comprising valve means movable between a first condition in which communication is provided between the inlet and the chamber, and between the chamber and the outlet, and a second condition providing communication from the inlet to the outlet other than by way of the chamber.

In this manner when the delivery line is to be cleaned, the valve means may be moved to its second condition, and a sponge pellet passed through the delivery line, bypassing the fob detector. On completion of the cleaning operation, the valve means may be moved to its first condition, and the delivery line used in a conventional manner.

Preferably the communication is one in which a relatively direct line extends from the inlet to the outlet, which is preferably straight, but not necessarily so.

If desired the valve means may be moved to a third condition, in which (for example) communication is provided between the inlet and the chamber, but in which the outlet is blanked off, allowing (typically) a cleaning fluid to be fed along the delivery line into the chamber, to dwell for some time in the chamber, prior to movement of the valve means to its first condition, allowing venting of the cleaning fluid from the chamber.

There will now be given a detailed description, to be read with reference to the accompanying drawings, of a valve mechanism which is a

preferred embodiment of this invention, having been selected for the purposes of illustrating the invention by way of example.

In the accompanying drawings:

Figure 1 is a schematic view of the preferred embodiment;

Figure 2 is a sectional view, showing valve means in a first condition; and

Figure 3 is a view similar to Figure 1, showing the valve means in a second condition.

The valve mechanism which is the preferred embodiment of this invention is specifically for use in the dispensing of beer, to be inserted in a delivery line extending from a supply (not shown) to a conventional dispensing head (also not shown), and comprising a housing 6 having an inlet 8, which in use is connected by a relatively short length of line to the supply, and an outlet 10 which extends to the dispensing head.

Mounted on the housing is a chamber 12, conventionally of transparent plastics material such as perspex, in which is located a float 14 guided for vertical movement by guide rods 16, one guide rod 16a constituting an inlet flow tube, through which beer enters the chamber 12 at a higher position.

Beer flowing from the chamber 12 exits through an outlet port 18 to the outlet 10, and in the absence of liquid in the chamber 12, the float 14 falls, covering the port 18 and preventing the flow of fluid (froth or air) from the chamber 12 to the outlet 10.

Mounted in the housing 6 is a valve body 20 comprising twin cylindrical valve members 22a, 22b, each being three-port valves in T-configuration, movable by handles 23a, 23b, respectively. In the first condition of the valve means, shown in Figure 2, the spool 22b connects the inlet 8 with the inlet pipe 16a, whilst the spool 12a connects the outlet port 18 with the outlet 10.

In the second condition, shown in Figure 3, the spools connect the inlet to the outlet directly, or if desired by way of a short intermediate passage 26, so

as to provide a path of untortuous nature from the inlet to the outlet, to allow a sponge cleaning pellet to pass therethrough without difficulty.

Desirably the path is in the form of a straight line.

If desired, the valve means may be moved into a third condition, in which the spool 22b is in the position shown in Figure 2, whilst the spool 22a is in the position shown in Figure 3, allowing cleaning fluid to be fed through the inlet into the chamber 12, for cleaning purposes, and to dwell therein prior to allowing the fluid to vent.

The present invention has been described above in relation to the delivery of beer from a supply to a dispensing head. It is however to be understood that the invention may be utilised where similar or analogous problems arise, to produce similar or analogous benefits. In particular, it is to be appreciated that the term "beer" is used herein generically, as specifically including bitter beers, mild beers, ales, stouts, lagers and the like.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS

1. A valve mechanism of the kind specified, comprising valve means movable between a first condition in which communication is provided between the inlet and the chamber, and between the chamber and the outlet, and a second condition providing communication from the inlet to the outlet other than by way of the chamber.

2. A valve mechanism according to Claim 1 in which the communication is one in which a relatively direct line extends from the inlet to the outlet.

3. A valve mechanism according to Claim 2 wherein said direct line is straight.

4. A valve mechanism according to any one of the preceding claims wherein the valve means is positioned in a flow line extending from the supply to the dispensing head, movement of the valve means to its second condition causing liquid to be diverted from an upstream section of the flow line into the chamber, and allowing diverted liquid to return from the chamber to the flow line at a downstream section thereof.

5. A valve mechanism according to any one of the preceding claims wherein the valve means comprises a valve body, at least one valve member mounted in the body for rotary movement between a position in which it communicates with the inlet or outlet and a position in which it communicates with the chamber.

6. A valve mechanism according to any one of the preceding claims wherein the valve means is movable to a third condition in which communication

is provided between the inlet and the chamber, but in which the outlet is not in communication with the chamber.

7. A valve mechanism of the kind specified, constructed and arranged substantially as hereinbefore described with reference to the accompanying drawings.

8. Any novel feature or novel combination of features hereinbefore described and/or shown in the accompanying drawings.

Patents Act 1977 Examiner's report to the Comptroller under Section 17 (The Search report)	Application number GB 9409195.6
Relevant Technical Fields (i) UK Cl (Ed.N) B8N NHCD, F2V VS14, VV13 (ii) Int Cl (Ed.6) B67D 1/12, 1/07 F16K 17/42, 31/18, 31/20, 31/22	Search Examiner MR S WALLER Date of completion of Search 4 AUGUST 1995
Databases (see below) (i) UK Patent Office collections of GB, EP, WO and US patent specifications. (ii) ONLINE: WPI	Documents considered relevant following a search in respect of Claims :- 1 TO 7

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
Y	GB 1357953	(PORT-LANCASTRIAN) see Figure 1	1
Y	IE 229/79	(DUNNE) see Figure 1	1
Y	WO 94/25393 A1	(ONYX) see Figure 1	1
Y	US 3827452	(GEMCO) see Figure 2, column 8 line 58 to line 67	1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).